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M a s s a c h u s e t t s
D e p a r t m e n t
of
E N V I R O N M E N T A L
P R O T E C T I O N

INDICATIVE PROJECT SUMMARIES

Water Loss Prevention Grant Program

FFY 2004

**Commonwealth of Massachusetts Executive Office of Environmental Affairs
Stephen R. Pritchard, Secretary**

**Massachusetts Department of Environmental Protection
Robert W. Golledge, Jr. Commissioner**

**Bureau of Resource Protection
Glenn Haas, Acting Assistant Commissioner**

**Division of Municipal Services
Steven J. McCurdy, Director**

2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL
PROTECTION**

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WATER LOSS PREVENTION GRANT PROGRAM

FFY 2004

**Prepared by:
Malcolm Harper**

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**Massachusetts Department of Environmental Protection
627 Main Street, 2nd floor
Worcester, MA 01608**

**This report is also available from Department's home page on the World Wide Web at
<http://www.mass.gov/dep/water/grants.htm>**

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A complete list of reports published since 1963 is updated and printed in July. This report, entitled, "Publications of the Massachusetts Division of Watershed Management, 1963 - (current year)," is also available by writing to the DWM in Worcester. The report can also be found at the Department's web site, at <http://www.mass.gov/dep/water/grants.htm>

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INTRODUCTION

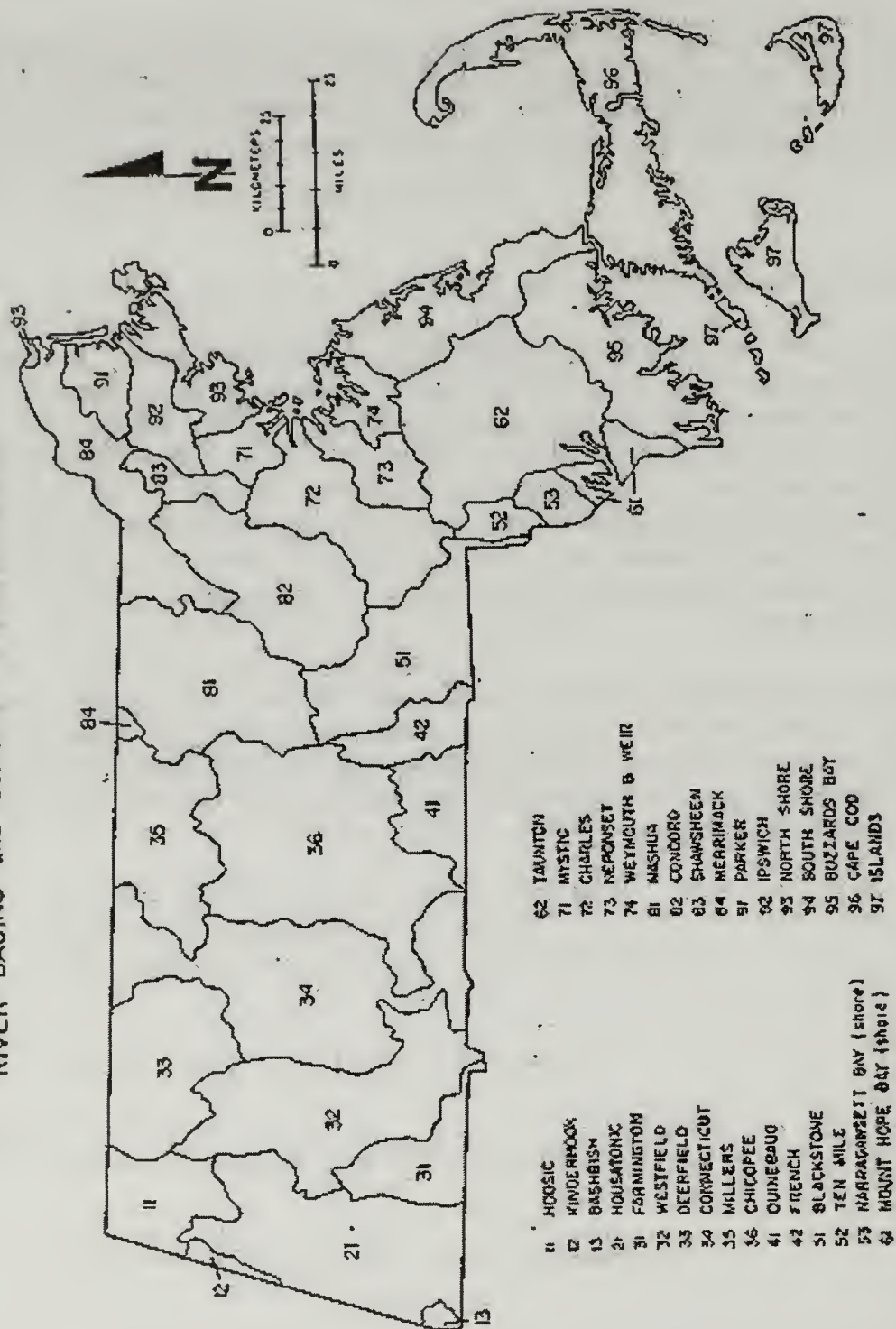
This report presents Indicative Project Summaries of projects supported by the Water Loss Prevention Grant Program during federal fiscal year 2004. This program was developed in support of the 1996 Safe Drinking Water Act Amendments and the Department's Source Water Assessment Program (SWAP). Funding is provided from the Drinking Water State Revolving Fund.

Water Loss Prevention Grant Program

The purpose of the Water Loss Prevention Grant Program is to assist public water systems to address drinking water supply and distribution systems water losses and to support projects that promote the implementation of drinking water conservation programs. Priority is given to those public water systems who have withdrawal points located within a medium or highly stressed basin and as per the Water Resources Commission. Stressed basins have been identified by the Water Resources Commission as having: the volume of streamflow significantly reduced; a significant environmental concern that would benefit from a reduction in demand or; having an identified issue where the public water system cannot meet demand (i.e., MassDEP authorized Emergency Declaration).

Eligible activities for funding include water audits, leak detection programs, public water conservation outreach programs, and the development of geographic information system (GIS) maps of the supply and distribution systems piping, valves, and hydrants that will enhance annual leak detection surveys for those systems with deficient maps, and other projects that focus on drinking water loss identification, resolution, and prevention.

COMMONWEALTH of MASSACHUSETTS RIVER BASINS and COASTAL DRAINAGE AREAS



**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-01/WLP**

PROJECT TITLE: Millis Water Loss Prevention Grant Project

INVESTIGATOR: Town of Millis

LOCATION: Charles River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of Millis drinking water works and distribution system. The Town has sources of supply that are located in a stressed subwatershed. The Town's goal is to reduce unaccounted for water loss to 10 percent or less.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection survey for 42 miles of water mains and appurtenances of the water distribution system. Establish a priority system to implement leak repairs;
3. Review and evaluate maintenance, calibration and reading practices existing master production meters. Sample those commercial meters not yet sampled with data-logging devices to determine whether or not the meter needs to be down-sized or replaced with a different type of meter. Estimate water losses associated with the commercial meters and recommend additional steps for meter analysis and replacement;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$42,766

FUNDING: \$31,600 by the U.S. Environmental Protection Agency
\$11,166 by the Town of Millis

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-02/WLP**

PROJECT TITLE: Walpole Water Loss Prevention Grant Project

INVESTIGATOR: Town of Walpole

LOCATION: Charles River and Boston Harbor Basins

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town's drinking water works and distribution system. The Town has sources of supply that are located stressed subwatersheds. The Town proposes to reduce its unaccounted for water loss to 10 percent or less in order to satisfy its Water Management Act Program permit requirements.

The Town will quantify the water savings from project related activities in both gallons per year and an approximate dollar value.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection survey for the 149 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs;
3. Evaluate Water Meters (serves as project match). Review and evaluate information on meters, water consumption by meter size and use category. Test meters by isolating and comparing to a certified and calibrated meter. Recommend additional steps for meter analysis and evaluation. Retrofit or replace approximately 10 meters with new transmitter units;
- 5: Prepare quarterly reports and other deliverables to the Department; and
- 6: Prepare a draft and a final project report.

COST: \$54,595

FUNDING: \$40,000 by the U.S. Environmental Protection Agency
\$14,595 by the Town of Walpole

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-03/WLP**

PROJECT TITLE: West Bolyston Water Loss Prevention Grant Project

INVESTIGATOR: West Bolyston Water District

LOCATION: Nashua River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the West Boylston Water District's drinking water works and distribution system, and reduction of the amount of water withdrawal of their sources. Reducing the amount of water withdrawn from their sources will assist in alleviating stress on the River basin.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection program; purchase leak detection equipment; and conduct a comprehensive field survey for 53 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs;
3. Replace approximately 480 service meters in fiscal year 2006 (serves as project match);
4. Water Conservation Program: Distribute Low Impact Development concepts to agricultural, commercial, industrial, and residential consumers. Conduct at least two public meetings to provide residents and high-volume water users with an overview of conservation program. Conduct at least two meetings with West Boylston High School staff and administrators. Purchase and distribute selected water conservation pamphlets from the to encourage residential, commercial and industrial water conservation within the District. Broadcast local cable announcement on water conservation;
- 5: Prepare quarterly reports and other deliverables to the Department; and
- 6: Prepare a draft and a final project report.

COST: \$49,050

FUNDING: \$30,050 by the U.S. Environmental Protection Agency
\$19,000 by the West Boylston Water District

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-04/WLP**

PROJECT TITLE: Halifax Water Loss Prevention Grant Project
INVESTIGATOR: Town of Halifax
LOCATION: Taunton River Watershed

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of Halifax Water Department's drinking water works and distribution system. The Town proposes to reduce its unaccounted for water loss to 10 percent or less in order to satisfy Water Management Act Program permit requirements.

This project will consist of a water audit, leak detection survey, and implementation of a water conservation education and outreach program. The Town of Halifax commits to the repair of identified leaks in accordance with the current Water Management Act Permit requirements. The Town will quantify the water savings from project related activities in both gallons per year and an approximate dollar value.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection survey for the 60 miles of water mains and appurtenances of the water distribution system network that may include source of supply transmission lines;
3. Develop and implement a water conservation education and outreach program. Water conservation plans should include water conservation measures, universal metering, water accounting and loss control, costing and pricing, information and education, pressure management, landscape efficiency, reuse and recycling, water-use regulation, and integrated resource management. Conservation efforts can include water use reduction plans, working with public schools, and distributing conservation outreach and education information;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$49,000
FUNDING: \$39,000 by the U.S. Environmental Protection Agency
\$10,000 by the Town of Halifax
DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-05/WLP**

PROJECT TITLE: Barre Water Loss Prevention Grant Project
INVESTIGATOR: Town of Barre
LOCATION: Chicopee River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of Barre's drinking water works and distribution system. The Town has sources of supply that are located in stressed subwatersheds within the Chicopee River Watershed. The Town proposes to reduce its unaccounted for water loss to 10 percent or less.

Specific tasks include:

- 1: Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
- 2: Conduct a comprehensive leak detection program or enhance an existing program; provide training; purchase leak detection equipment; and conduct a comprehensive field survey for 23 of water mains and appurtenances of the water distribution system network;
- 3: Replace approximately 225 service meters. This task will serve as the project match share;
- 4: Develop and implement a water conservation education and outreach program. Water conservation plans should include but is not limited to water conservation measures, universal metering, water accounting and loss control, costing and pricing, information and education, pressure management, landscape efficiency, reuse and recycling, water-use regulation, and integrated resource management;
- 5: Prepare quarterly reports and other deliverables to the Department; and
- 6: Prepare a draft and a final project report.

COST: \$49,000
FUNDING: \$39,000 by the U.S. Environmental Protection Agency
\$10,000 by the Town of Barre
DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-06/WLP**

PROJECT TITLE: Avon Water Loss Prevention Grant Project
INVESTIGATOR: Town of Avon
LOCATION: Taunton River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of Avon's drinking water works and distribution system. The Town has sources of supply that are located in a stressed subwatershed within the Taunton River Watershed. The Town proposes to reduce its unaccounted for water loss to 10 percent or less in order to satisfy Water Management Act Program permit requirements.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection survey of the 42.5 miles of water mains and appurtenances of the water distribution system network;
3. Implement a rate structure that would generate revenue required to cover operating and maintenance expense, debt service payment and projected future capital outlay. Rate structure should distribute revenue requirement on an equitable basis to customers. Water-use charges should be based on increasing block rates;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$31,420

FUNDING: \$23,000 by the U.S. Environmental Protection Agency
\$8,420 by the Town of Avon

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-07/WLP**

PROJECT TITLE: Worcester Water Loss Prevention Grant Project

INVESTIGATOR: City of Worcester

LOCATION: Blackstone and Nashua River Basins

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the City of Worcester's drinking water works and distribution system. The City has sources of supply that are located within the Blackstone and Nashua River Watersheds. The City is attempting to reduce its unaccounted for water loss to 10 percent or less.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a leak detection survey for 300 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs;
3. Review records on the existing master production meters to evaluate maintenance, calibration and reading practices. Master meters will be calibrated in conjunction with the leak detection work survey. Test approximately 100 larger commercial meters, 3-inches and larger. Estimate water losses associated with the commercial meters and recommend additional steps for meter analysis and replacement;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$18,500

FUNDING: \$14,000 by the U.S. Environmental Protection Agency
\$4,500 by the City of Worcester

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-08/WLP**

PROJECT TITLE: Department of Correction Water Loss Prevention Grant Project
INVESTIGATOR: Department of Correction
LOCATION: Taunton, Charles Nashua, and South Coastal Basins

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Massachusetts Department of Correction drinking water works and distribution systems that serve MCI-Bridgewater, MCI-Norfolk, MCI-Shirley, and MCI-Plymouth.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss) at each of the four project sites: MCI-Bridgewater, MCI-Norfolk, MCI-Shirley, and MCI-Plymouth;
2. Conduct comprehensive leak detection surveys, including all water mains, transmission lines, and appurtenances, of the water systems at each of the four project sites;
3. Review production meters, discharge meters, and building meters in use at MCI-Bridgewater, MCI-Norfolk, MCI-Shirley, and MCI-Plymouth. Review records on the existing master production and discharge meters to evaluate maintenance, calibration, and reading practices for MCI-Bridgewater, MCI-Norfolk, MCI-Shirley, and MCI-Plymouth. The accuracy of the meters will be field verified by measuring actual flows in the distribution pipe leaving the pump stations compared with the meter readings. Estimate water losses associated with the meters and recommend additional steps for meter analysis and replacement;
4. Replace up to a total of 300 priority faucets, 100 showerheads, and 100 electronic toilet controls to reduce water consumption. This task will be conducted as part of an in-kind match contribution;
5. Prepare quarterly reports and other deliverables to the Department; and
6. Prepare a draft and a final project report.

COST: \$42,000
FUNDING: \$31,000 by the U.S. Environmental Protection Agency
\$11,000 by the Department of Correction
DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-09/WLP**

PROJECT TITLE: Milford Water Loss Prevention Grant Project
INVESTIGATOR: Milford Water Company
LOCATION: Charles River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Milford Water Company's drinking water works and distribution system. The Company's goal is to reduce it's unaccounted for water loss to 10 percent or less.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a comprehensive leak detection survey for approximately 102 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs. Repair identified leaks in accordance with the current Water Management Act Permit requirements;
3. Review records on the existing master production meters to evaluate maintenance, calibration and reading practices. The accuracy of the meters will be field verified by measuring actual flows in the distribution pipe leaving the pump stations compared with the meter readings. This will be performed as part of the zoning work under Task 1 and will indicate whether the meters require servicing. Sample those commercial meters not yet sampled with data-logging devices to determine whether or not the meter needs to be down-sized or replaced with a different type of meter. Estimate water losses associated with the commercial meters and recommend additional steps for meter analysis and replacement;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$24,300
FUNDING: \$12,300 by the U.S. Environmental Protection Agency
\$12,000 by the Milford Water Company
DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-10/WLP**

PROJECT TITLE: Lynnfield Center Water Loss Prevention Grant Project

INVESTIGATOR: Lynnfield Center Water District

LOCATION: Ipswich and North Coastal Basins

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Lynnfield Center Water District drinking water works and distribution system. The District proposes to reduce its unaccounted for water loss to 10 percent or less in order to satisfy Water Management Act Program permit requirements.

Specific tasks include:

1. Purchase leak detection equipment; leak correlator, interface module, and six sensing correlator 'pods';
2. Conduct a comprehensive leak detection survey for 47 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs. Repair identified leaks within a year of discovery as per the 2001 Guidance and Policies for Public Water Supplies;
3. Prepare quarterly reports and other deliverables to the Department; and
4. Prepare a draft and a final project report.

COST: \$30,000

FUNDING: \$24,000 by the U.S. Environmental Protection Agency
\$6,000 by the Lynnfield Center Water District

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-11/WLP**

PROJECT TITLE: Wilmington Water Loss Prevention Grant Project
INVESTIGATOR: Town of Wilmington
LOCATION: Ipswich River Basin
DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of Wilmington's drinking water works and distribution system. The Town proposes to reduce its unaccounted for water loss to 10 percent or less in order to satisfy Water Management Act Program permit requirements.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a leak detection survey for 125 miles of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs;
3. Evaluate maintenance, calibration and reading practices for the two master production meters. The accuracy of meters will be field verified by measuring actual flows in the distribution pipe leaving the pump stations compared with the meter readings. Sample those commercial meters not yet sampled with data-logging devices to determine whether or not the meter needs to be down-sized or replaced with a different type of meter. Estimate water losses associated with commercial meters and recommend additional steps for meter analysis and replacement;
4. Conduct individual water audits for at least the ten largest industrial water users for the previous calendar year. Visits will include detailed analysis of the water use process, identifying points of loss, and recommendations for water conservation and savings techniques. This task is presented a match;
5. Prepare quarterly reports and other deliverables to the Department; and
6. Prepare a draft and a final project report.

COST: \$49,450
FUNDING: \$23,050 by the U.S. Environmental Protection Agency
\$26,400 by the Town of Wilmington
DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-12/WLP**

PROJECT TITLE: Ashland and Hopkinton Water Loss Prevention Grant Project

INVESTIGATOR: Town of Ashland

LOCATION: Sudbury, Charles, and Blackstone River Basins

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Towns of Ashland's and Hopkinton's drinking water works and distribution systems. The Towns of Ashland and Hopkinton commit to the repair of identified leaks in accordance with their respective current Water Management Act Permit requirements.

Specific tasks include:

1. Conduct a water audit for the Town of Ashland to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a leak detection survey for 68 miles of water mains and appurtenances of the Town of Ashland's water distribution system network. Establish a priority system to implement leak repairs. Repair identified leaks in accordance with the current Water Management Act Permit requirements;
3. Conduct a leak detection survey for 80 miles of water mains and appurtenances of the Town of Hopkinton's water distribution system network. Establish a priority system to implement leak repairs. Repair identified leaks in accordance with the current Water Management Act Permit requirements;
4. Prepare quarterly reports and other deliverables to the Department; and
5. Prepare a draft and a final project report.

COST: \$38,000

FUNDING: \$22,000 by the U.S. Environmental Protection Agency
\$16,000 by the Town of Ashland

DURATION: 2005-2006

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-13/WLP**

PROJECT TITLE: West Springfield Water Loss Prevention Grant Project
INVESTIGATOR: Town of West Springfield
LOCATION: Connecticut River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the Town of West Springfield's drinking water works and distribution system. The Town will quantify the water savings from project related activities in both gallons per year and an approximate dollar value.

Specific tasks include:

1. Conduct a water audit to balance the volume of drinking water produced with the volume billed and account for the remaining water (loss);
2. Conduct a leak detection survey for at least half of the entire distribution system (50 miles) each year of water mains and appurtenances of the water distribution system network. Establish a priority system to implement leak repairs;
3. Develop a Geographic Information System map and data layers of Town's drinking water supply infrastructure lacking adequate maps;
4. Develop and implement a water conservation education and outreach program. Water conservation public education and outreach programs should include bill stuffers or mailers, public service announcements, providing educational materials and presentations to schools, and speakers for community groups;
5. Prepare quarterly reports and other deliverables to the Department; and
6. Prepare a draft and a final project report.

COST: \$39,000
FUNDING: \$31,000 by the U.S. Environmental Protection Agency
\$8,000 by the Town of West Springfield
DURATION: 2005-2007

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER LOSS PREVENTION PROJECT 04-14/WLP**

PROJECT TITLE: Holyoke Water Loss Prevention Grant Project

INVESTIGATOR: City of Holyoke

LOCATION: Connecticut River Basin

DESCRIPTION: This project will identify and reduce unaccounted for water loss from the City of Holyoke's drinking water works and distribution system. The City of Holyoke commits to the repair of identified leaks.

Specific tasks include:

1. Conduct a leak detection program; and conduct a comprehensive field survey for 200 miles of water mains and appurtenances of the water distribution system network that may include source of supply transmission lines. Establish a priority system to implement leak repairs;
2. Prepare quarterly reports and other deliverables to the Department; and
3. Prepare a draft and a final project report.

COST: \$50,000

FUNDING: \$40,000 by the U.S. Environmental Protection Agency
\$10,000 by the City of Holyoke

DURATION: 2005-2006

